



THE ATMOSPHERIC RESERVOIR

Examining the Atmosphere and Atmospheric Resource Management

Change of seasons is in the air...

By Darin Langerud

It begins very slowly the first day of summer. The sun rises later and sets earlier by a few minutes a day, and soon crops ripen and harvest begins. Before long, the nights are noticeably longer, temperatures noticeably cooler, and leaves begin to turn. Yes, fall is in the air.

This year, fall began on September 22. The official date of its beginning changes slightly from year to year, but the date on the calendar only identifies the astronomical event that makes it significant. What we experienced on September 22 is called the autumnal equinox, signifying the time when the sun's rays fall directly on the earth's equator, and daylight and darkness are of equal length. We have seasons because the earth's axis of rotation is tilted 23 1/2 degrees from what would be considered "straight up" from the earth's orbital plane. The earth stays tilted the same way all the time as it orbits the sun, so sometimes the northern hemisphere is tilted away from the sun (winter), and half a year later, toward the sun (summer).

The angle of the sun's height in the noon sky changes by forty-seven degrees from the first day of summer to the first day of winter. As we know, living here in North Dakota, this has a profound impact on our weather. When the sun is high in the

sky and its rays strike the ground at a high angle, they warm the ground much more efficiently than when the sun is low. No wonder we can see temperatures over one hundred degrees in July and minus forty degrees in January in the same place!

If not for our Earth's tilted axis, life would be much different. Seasons would be constant, unchanging, with the equator experiencing perpetual summer and the high northern and southern latitudes experiencing constant winter. Without the change of seasons, North Dakota would be a much different place.

Our Earth will continue its trek around the sun with each day getting shorter until the winter solstice in December, the first day of winter, when the northern hemisphere is tilted farthest away from the sun. Then, slowly, the days will begin to lengthen again and spring won't be far away. ■

Atmospheric Resource Board
North Dakota State Water Commission
900 East Boulevard, Bismarck, ND 58505
(701) 328-2788
Internet: <http://www.swc.state.nd.us/ARB/>
ND Weather Modification Association
PO Box 2599, Bismarck, ND 58502
(701) 223-4232

